

(12) PATENT APPLICATION
(19) AUSTRALIAN PATENT OFFICE

(11) Application No. AU 198775794 A1
(10) Patent No. 583738

(54) Title
Vehicle safety screen fixing means

(51) International Patent Classification(s)
B60R 021/02

(21) Application No: 198775794

(22) Date of Filing: 1987.07.16

(30) Priority Data

(31) Number
PH6948

(32) Date
1986.07.16

(33) Country
AU

(43) Publication Journal Date: 1988.01.21

(44) Accepted Journal Date: 1989.05.04

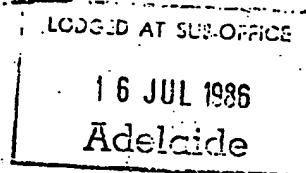
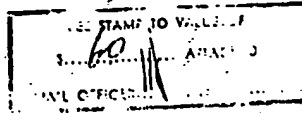
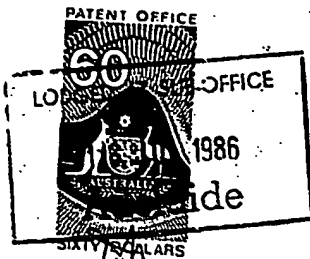
(71) Applicant(s)
Rees Operations Pty. Ltd.

(54) Inventor(s)
Mark Anthony Giumelli; Gradimir Zivkovic

BEST AVAILABLE COPY

AUSTRALIA

583 FORM 1



COMMONWEALTH OF AUSTRALIA
PATENTS ACT 1952-1966

APPLICATION FOR A PATENT

I/We REES OPERATIONS PTY. LTD.

of 24 Starr Avenue, Plympton North,
State of South Australia,
Commonwealth of Australia

hereby apply for the grant of a Patent for an invention entitled
"VEHICLE SAFETY SCREEN FIXING MEANS"

which is described in the accompanying provisional/~~complete~~ specification.

My/Our address for service is care of R. K. MADDERN & ASSOCIATES, Patent
Attorneys, 27 King William Street, Adelaide, South Australia.
345

Dated this 16th day of July, 19 86 .

REES OPERATIONS PTY. LTD.

By its Patent Attorneys,
R.K. MADDERN & ASSOCIATES

A handwritten signature in dark ink, appearing to read 'R.S. Catt'.

R.S. CATT.

TO:
-THE COMMISSIONER OF PATENTS,
CANBERRA, A.C.T.

AUSTRALIA

FORM 6

(Note: To be signed by the applicant(s), or if a Company, to be signed by a person on its behalf. Parts inappropriate to a particular application should be cancelled).

COMMONWEALTH OF AUSTRALIA

Patents Act 1952-1969

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT OR PATENT OF ADDITION

INSTRUCTIONS

Insert if available.

Full name(s) of applicant(s).

In support of the Application made by

REES OPERATIONS PTY. LTD.

Title of invention.

for a patent/~~patent of addition~~ for an invention entitled

"VEHICLE SAFETY SCREEN FIXING MEANS"

Full name(s) of declarant(s).

I/~~we~~ JOHN MILFORD REES, Director

Address(es) of declarant(s).

of 24 Starr Avenue, Plympton North,
State of South Australia,
Commonwealth of Australia

do solemnly and sincerely declare as follows:—

1. ~~I am/we are the applicant(s) for the patent/patent of addition~~
(or, in the case of an application by a body corporate)

1. I am/~~we are~~ authorized by the abovementioned applicant(s) for the patent/~~patent of addition~~ to make this declaration on its/~~their~~ behalf.

2. ~~I am/we are the sole/one of the inventors~~
(or, where a person other than the inventor is the applicant).

Full name(s) of actual inventor(s).

2. MARK ANTHONY GIUMELLI and GRADIMIR ZIVKOVIC
12 Macquarie Street, Moana South
55 Nicolle Drive, Morphett Vale (respectively)
State of South Australia,
Commonwealth of Australia

Address(es) of actual inventor(s).

Respective manner in which applicant(s) derive(s) title from actual inventor(s).

is/~~are~~ the actual inventor(s) of the invention and the facts upon which the applicant(s) is/~~are~~ entitled to make the application are as follows:—

By virtue of the provisions of Section 34(1) (fa) of the Patents Act, 1952

Declared at

Adelaide

this

16th

day of

July

1986

John Rees

Signature(s) of declarant(s).

(Note: No attestation or other signature is required).

(12) PATENT ABRIDGMENT (11) Document No. AU-B-75794/87
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 583738

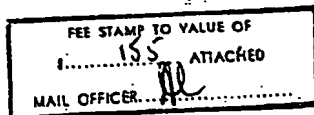
- (54) Title
VEHICLE SAFETY SCREEN FIXING MEANS
- (51)* International Patent Classification(s)
B60R 021/02
- (21) Application No. : 75794/87 (22) Application Date : 16.07.86
- (23) Filing Date of Complete Specification : 16.07.87
- (43) Publication Date : 21.01.88
- (44) Publication Date of Accepted Application : 04.05.89
- (30) Related to Provisional(s) : PH6948
- (71) Applicant(s)
REES OPERATIONS PTY. LTD.
- (72) Inventor(s)
MARK ANTHONY GIUMELLI; GRADIMIR ZIVKOVIC
- (74) Attorney or Agent
R.K. MADDERN & ASSOCIATES
- (56) Prior Art Documents
61480/80 B60R 21/10
24807/84 B60R 21/06
- (57) Claim

1. A safety screen assembly comprising a safety screen including a peripheral frame adapted to be mounted in the interior of a vehicle having a load carrying area so as to separate the load carrying area from the front or rear seat of the vehicle, and securing means for anchoring the screen when mounted in the vehicle, said securing means comprising a first pair of rearwardly extending short length metal securing straps positioned one at or adjacent each upper corner of the safety screen and a second pair of rearwardly extending metal securing straps positioned one at or near each lower corner of the screen, each said securing strap having its forward end swingably supported by pivot means carried by respective attachment means secured to the safety screen frame, the trailing or rear end of each strap of the

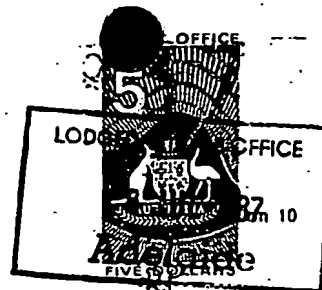
(11) AU-B-75/94/87
(10) 583738

-2-

first pair of straps being adapted for securement to the vehicle body panel in the vicinity of the vehicle roof, each of the straps of the said second pair of straps having its rear or trailing end adapted for securement to an attachment point in the vicinity of the motor vehicle floor.



COMMONWEALTH OF AUSTRALIA
PATENTS ACT 1952-62



COMPLETE SPECIFICATION

(ORIGINAL)

LODGED AT SUB OFFICE

16 JUL 1987

Adelaide

FOR OFFICE USE:

Application Number:
Lodged:

Class

Int. Class

Complete Specification Lodged:

Accepted:

Published:

Priority:

Related Art:

This document is the
original of the
specification for
patents.

Name of Applicant: TO BE COMPLETED BY APPLICANT
REES OPERATIONS PTY. LTD.

Address of Applicant: 24 Starr Avenue, Plympton North, State of
South Australia, Commonwealth of Australia.

Actual Inventor: MARK ANTHONY GIUMELLI and GRADIMIR ZIVROKIV
12 Macquarie Street, Moana South, and 55 Nicolle
Drive, Morphett Vale (respectively), both of the
State of South Australia, Commonwealth of Australia.

Address for Service: R.K. MADDERN & ASSOCIATES, 345 King William Street,
Adelaide, State of South Australia, Commonwealth of
Australia.

Complete Specification for the invention entitled:

"VEHICLE SAFETY SCREEN FIXING MEANS"

The following statement is a full description of this invention, including the best method of performing it
known to ~~me~~ us.

This invention relates to improvements in and to a vehicle safety screen which is useful in a vehicle to inhibit the forward movement of a load carried behind a driver or passenger, and in particular to an improved means for fixing the safety screen in position within the vehicle.

In many instances tray trucks are provided with heavy upstanding frames which are capable of resisting forward movement of a load on a truck should that truck come to a sudden halt due to an impact in the case of an accident; for example. This has been found to be generally satisfactory in protecting the driver and passenger or passengers in the truck cab, but the load safety screens which are being used in other types of vehicles, for example panel vans and station wagons, have not been equally as successful and it is possible for a heavy load to cause the screen to break away under impact conditions of the vehicle.

The main object of this invention is to provide a means whereby a safety screen is less likely to be ineffectual than safety screens which have been previously used, and in particular an improved safety screen securing system which will securely anchor the safety screen and significantly reduce the likelihood of the screen breaking away from its anchorage under impact conditions of the vehicle which might result in a heavy load being impacted against the screen.

It is a further object of the present invention to provide an improved securing system for a motor vehicle safety screen which allows the safety screen to be simply and quickly installed in more than one position within the vehicle.

According to this invention therefore, a safety screen assembly comprises a safety screen including a peripheral frame adapted to be mounted in the interior of a vehicle so as to ~~extend transversely thereof between the~~ ^{separate its} load carrying area ~~from~~ and its front or rear seat and securing means for anchoring the screen when mounted in the vehicle, said securing means comprising a first pair of rearwardly extending short-length metal securing straps positioned one at or adjacent each upper corner of the safety screen and a second pair of rearwardly extending securing straps positioned one at or adjacent each lower corner of the screen, each said securing strap having its forward end pivotally attached to respective attachment means ~~projecting rearwardly from and attached~~ ^{secured} to the safety screen frame, the trailing or rear end of each strap of the first pair of straps being adapted for securement to the vehicle body panel in the vicinity of the vehicle roof, each of the straps of the second pair of straps having its rear or trailing end adapted for securement to an attachment point in the vicinity of the motor vehicle floor.

Preferably, each said attachment means comprises a fixed mounting bracket ^{and projecting rearwardly from} secured to the screen frame, a U-shaped connector member having its opposed legs projecting rearwardly, the connector member being carried by said fixed mounting bracket for limited rocking movement, and pivot means carried between the legs of the connector member and pivotably supporting the leading end of a respective said securing strap located between the legs. With this arrangement, each of the securing straps (prior to being fixed at its trailing end) is able to be freely pivoted about one pivot axis as well as



bodily rotated through a limited arc about an axis at right angles to said one pivot axis. Such movement of the straps greatly facilitates the securement of their rear ends to their respective fixed attachment points in the vehicle.

5 In a preferred embodiment of the present invention, each of the upper straps has its trailing end secured to a mounting plate which is located by inserting same through a hole drilled in the body panel and fixed, e.g. by rivetting, to the panel. Each mounting plate comprises a first planar portion arranged
10 to lie contiguous with that face of the vehicle body panel remote from the associated said upper securing strap, and a second planar portion displaced from the plane of the first portion arranged to lie contiguous with that surface of the vehicle body panel facing the securing strap. A transverse
15 securing bolt clampingly secures together the mounting plate, the body panel and the upper securing strap. Preferably, a cover plate is interposed between the mounting plate and the securing strap so as to conceal the mounting plate and the manner in which it is fixed to the vehicle body panel.

20 In another preferred embodiment, each of the upper mounting plates comprises a captive nut welded intermediate its ends on the outer face thereof, the transverse securing bolt being arranged to threadably engage the captive nut in order to effect the clamping arrangement.

25 In another preferred embodiment of this invention, where the safety screen is mounted immediately behind the front seat of the goods carrying vehicle, each of the lower securing straps is relatively long and extends approximately horizontally across the vehicle floor and lying adjacent

thereto. Preferably, the rear end of the strap is arranged to be secured to an attachment point on the wheel arch of the vehicle. With this arrangement, the same lower fixing points can be used for the safety screen regardless of whether it is mounted in its forward position behind the front seat or in its rear position behind the rear vehicle seat.

Preferably, each of the metal securing straps comprises a series of transverse corrugations intermediate the ends thereof, the corrugations being effective to absorb some of the initial impact force when the goods impact against the safety screen, whereby the initial loading is absorbed by the straps themselves rather than the attachment points of the safety screen.

In order to more fully explain the applicant's invention, an embodiment is described hereunder in some further detail with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of a safety screen mounted behind the rear passenger seat of a station wagon vehicle (the screen also being shown in dotted lines mounted behind the front seat);

Fig. 2 is a fragmentary perspective view showing the connection between the upper securing strap and the screen;

Fig. 3 is a part sectional plan view showing the fixing of the upper securing strap to the vehicle body panel; and

Fig. 4 is a fragmentary perspective view similar to Fig. 2 for the lower strap.

The invention is applicable to a wide range of goods carrying vehicles, for example station wagons, panel vans, and utilities, the necessary changes being made, but in this

embodiment the safety screen is arranged for securing between the load carrying area of a station wagon and its rear passenger seat. With reference to the accompanying drawings, the safety screen 10 is shown (in dotted lines) mounted in a forward position immediately behind the front passenger seat 11 of the vehicle, and also in its rear position immediately behind the rear passenger seat. The screen 10 is formed with a peripheral frame 12 of tubular metal and at least one intermediate transversely extending frame member 13, the space between the peripheral frame 12 being filled with a heavy wire mesh 15 which, however, allows a driver to still have rear vision from a central interior rear vision mirror.

In this embodiment, the safety screen 10 is secured in position by means of four anchorage points, there being two fixing points 16 in the upper region of the sides of the vehicle (i.e. near the roof) and also two lower fixing points 17 in the vicinity of the floor 19 of the vehicle.

Each of the lower anchorage points 17 comprises a discoid plate 20 which is, in this embodiment secured by pop-rivets to a respective wheel arch panel 21. Each of the lower corners of the safety screen 10 is secured with respect to the discoid plates 20 by means of a pair of short length metal securing straps 22 each of which has its forward end pivotally attached to a bracket mounting 23 fixed to the screen frame 12 and its rear or trailing end fixedly secured, by means of a threaded fastener 25 to the discoid plate 20. As shown in Fig. 4, the strap 22 is bent to form an upwardly inclined portion 24 which is provided with a hole at its rear end for receiving the fastener 25. Each bracket mounting 23 comprises an angle

5 bracket 27 having an upwardly extending limb 28 welded to the
frame 12 and an approximately horizontal limb 29 projecting
rearwardly from the peripheral frame 12 of the safety screen
10, the limb 29 being provided with an aperture 30 for locating
a U-shaped connector 31, the bridge portion of which passes
through the aperture 30 and engages against the aperture
forming wall 32, the legs 34 of the connector 31 projecting
rearwardly and defining a space in which is accommodated the
forward end of the securing strap 22, the strap 22 being
10 pivotally attached to the connector 31 by means of a pivot bolt
35. The connector 31 is able to be bodily "rocked" in a
vertical plane as well as moved bodily to and fro in an
horizontal plane, whereby the securing strap 22 in turn is able
to be rotated bodily by a limited amount in a vertical plane,
15 in addition to it being able to be pivoted about the pivot bolt
35.

The safety screen 10 has its upper corners secured to
respective upper anchorage points 16 by means of rearwardly
projecting short length upper metal securing straps 37, each of
20 which has its leading or forward end pivotally attached with
respect to the safety screen peripheral frame 12 in a manner
similar to that described for the lower securing straps 22. As
shown in Fig. 2, however, the bracket 27' is fixed to the frame
12 so that its rearwardly projecting limb 29' is disposed
25 approximately vertically along with its associated connector
31' whereby the latter can be bodily "rocked" in an
approximately horizontal plane (or laterally of the limb 29').
The leading end of the strap 37 is pivotally connected to the
connector 31' by pivot bolt 35' supported by the opposed legs

34' of the connector 31', for pivotal movement about an axis transverse to the plane of the connector 31', whilst the trailing end of the strap 37 is fixedly secured to the side body panel 38 of the vehicle in the vicinity of the vehicle roof. Each of the upper anchorage points 16 comprises a metal mounting plate 39 which is arranged to extend through a hole 41 drilled in the vehicle body panel 38, the mounting plate 39 being arranged to have a first planar portion 42 engaging against the "outer" surface of the body panel 38, and a second planar portion 43 arranged to engage against the "inner" surface portion of the panel 38 in the vicinity of the hole 41. The mounting plate 39 is fixed in position by means of pop-rivets 44. The rear end of the securing strap 37 has an apertured portion 46 which abuts against a cover plate 47 positioned between the panel 38 and the portion 46, and a securing bolt 48 extends transversely through the portion 46, cover plate 47, panel 38 and mounting plate 39 and is threadably engaged within a captive nut 49 secured, by welding, to the outer face of the mounting plate 39, whereby the securing strap 37 and the mounting plate 39 are clampingly secured together.

In the event of the vehicle coming to a sudden halt or an impact collision, the load which is carried behind the screen will have its forward movement arrested by the screen which thereby protects a passenger or driver of the vehicle from any possible injury. With this invention, the safety screen is anchored in such a way that there is virtually no possibility of the screen breaking away from its anchorage points under impact conditions of the vehicle.

When the screen 10 is required to be mounted immediately behind the front seat 11 of the vehicle (as shown in dotted lines in Fig. 1), there is provided a pair of elongate mounting arms 50 which are used in lieu of the short length straps 22, the arms 50 being connected at their ends in the same manner as the straps 22. Preferably, each of the arms 50 is formed of plate metal which has a substantially horizontal planar arm portion 53 which merges with an approximate vertical planar portion 54 (formed by twisting the arm 50 through approximately 90°) which is anchored to the wheel arch anchorage point 17.

The upper straps 37 are anchored at their forward ends to new anchorage points 16' in the vicinity of the vehicle roof. This arrangement allows the same lower anchorage points to be used for securing the safety screen in either of its positions as shown in the accompanying drawing, and thereby avoid the need for additional mounting points to be provided within the vehicle. When the screen 10 is mounted in its rearward position, the mounting arms 50 are conveniently stored by simply detaching their rear ends and rotating same inwardly in the direction of the screen so as to lie alongside thereof, the straps 22 in turn being rotated outwardly ready for anchoring their outer ends to the anchorage points 17.

In a variation to the above description, the fixed angle brackets 27 may be replaced by a rearwardly projecting U-shaped metal rod bracket so as to form a closed loop with the screen frame. The connectors 31, 31' can then be simply straddled around the bridge portion of the loop.

In another variation to the above embodiment, the straps/arms 22, 50 are formed from plate metal and have a

series of transverse corrugations intermediate their ends. When a load encounters the screen, there will be some forward movement as the corrugations strain, and thus the time component of the dynamic force is increased and therefore the dynamic force is correspondingly decreased.

In yet another variation, the lower portion of the screen may be anchored in position by one or more intermediate securing straps, their trailing ends being secured to mountings fixed in the floor of the vehicle. Still further, the bracket attachment assembly connecting the forward end of each strap to the screen frame may be varied to that previously described, and, for example, the connectors 31 for the lower straps 22 may be disposed similar to the connectors 31' for the upper straps 37 by having the fixed brackets 27 attached to the side frame member of the screen rather than the bottom frame member as shown in the drawings. It is of course desirable that the straps be capable of pivotal movement as well as bodily rotational movement to facilitate their installation.

While this embodiment describes the use of four anchorage points, a person skilled in the art will understand that additional anchorage points may be used, particularly in the case of a van or panel-van type vehicles. In these vehicles, fixing points can be located in the van walls, and where the screen is particularly high, the additional anchorage points provide greater rigidity to the screen.

CLAIMS

The claims defining the invention are as follows:

1. A safety screen assembly comprising a safety screen including a peripheral frame adapted to be mounted in the interior of a vehicle having a load carrying area so as to separate the load carrying area from the front or rear seat of the vehicle, and securing means for anchoring the screen when mounted in the vehicle, said securing means comprising a first pair of rearwardly extending short length metal securing straps positioned one at or adjacent each upper corner of the safety screen and a second pair of rearwardly extending metal securing straps positioned one at or near each lower corner of the screen, each said securing strap having its forward end swingably supported by pivot means carried by respective attachment means secured to the safety screen frame, the trailing or rear end of each strap of the first pair of straps being adapted for securement to the vehicle body panel in the vicinity of the vehicle roof, each of the straps of the said second pair of straps having its rear or trailing end adapted for securement to an attachment point in the vicinity of the motor vehicle floor.

2. A safety screen assembly according to claim 1 wherein each said attachment means comprises a fixed bracket member secured to and projecting rearwardly from the frame and movable connector means carried by the fixed bracket member, said pivot means being carried by said movable connector means, constructed and arranged



so that each of the securing straps can be bodily rotated about an axis approximately at right angles to the pivot axis of its associated said pivot means.

3. A safety screen assembly according to claim 2 wherein said fixed bracket member comprises a first bracket portion secured to the screen frame and a second bracket portion extending rearwardly therefrom, an

5. aperture formed in the second bracket portion, and said movable connector means comprises a U-shaped saddle member loosely carried by the second bracket portion and having its opposed legs projecting rearwardly, beyond the rear transverse edge of the second bracket portion, one
10. on each side of the second bracket portion and its bridge portion passing through the aperture, each said pivot means being carried between the legs of a respective said saddle member adjacent the ends thereof.

4. A safety screen assembly according to any preceding claim wherein each of the metal securing straps comprises a series of transverse corrugations intermediate the ends thereof, the corrugations being

5. effective to absorb some of the initial impact force when a load impacts against the safety screen.

5. A safety screen assembly according to any preceding claim wherein each of the lower securing straps is relatively long and extends approximately horizontally above the vehicle floor and in proximity thereto, the
5. rear or trailing end of said lower strap being securable to an anchorage point fixed to the wheel arch of the vehicle.



6. A safety screen assembly substantially as hereinbefore described and with reference to and as illustrated in the accompanying drawings.

DATED THIS 16th day of JULY, 1987.

REES OPERATIONS PTY. LTD.

By its Patents Attorneys
R.K. MADDERN & ASSOCIATES

R. K. Madder

DRAWINGS

FIG 1

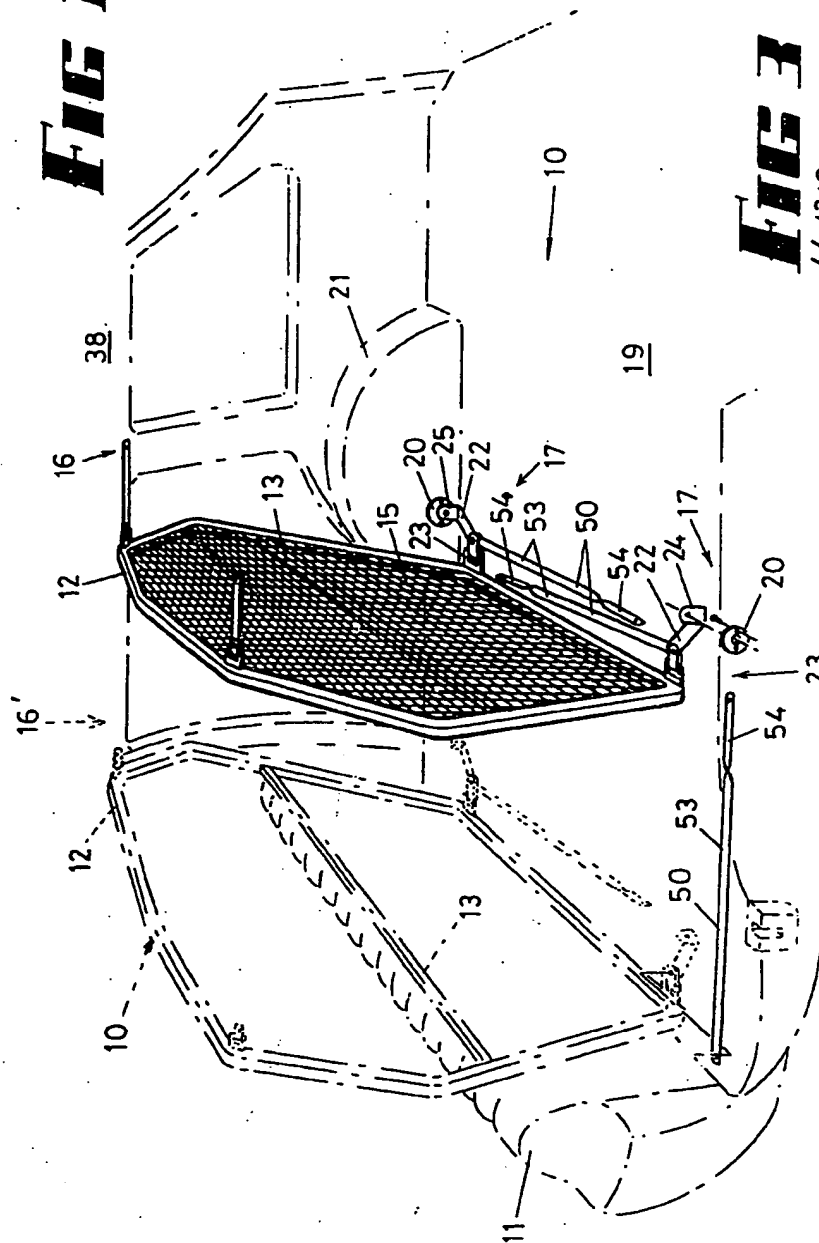
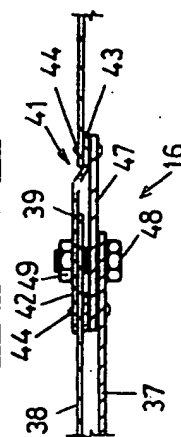


FIG 3



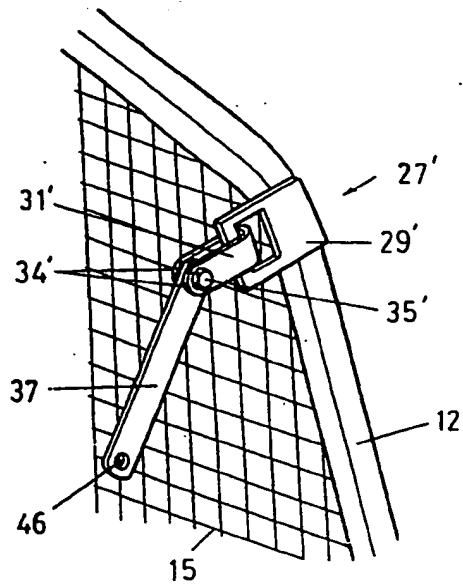


FIG 2

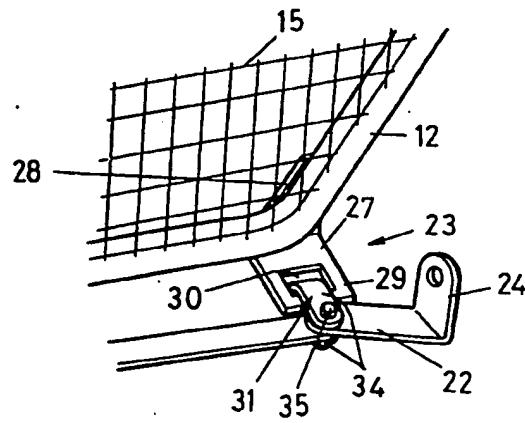


FIG 4

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

☒ **BLACK BORDERS**

☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**

☐ **FADED TEXT OR DRAWING**

☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**

☐ **SKEWED/SLANTED IMAGES**

☒ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**

☐ **GRAY SCALE DOCUMENTS**

☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**

☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**

☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.